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Attorney Docket No. 7594 P1
Customer No. 000049459

REMARKS

35 U.S.C. §103 Rejection

a. Hoots in view of Hoots

Claims 1,2 and 6-18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hoots et al. (U.S. Patent No 5,435,969) in view of Hoots (U.S. Patent No. 5,171,450). In pertinent part the Examiner states the following:

> Concerning part c) of claims 1 and 18, the tracer must necessarily travel through the membrane or not pass or travel through the membrane being monitored, this would be determined in advance of the separation process by ensuring that the tracer is such as not be consumed or degraded by the membrane water system being treated or monitored, so as to select a tracer that is assured as being truly inert (column 37, line 60-column 38, line55).

Applicants traverse the Examiner's rejection.

Hoots et al. (U.S. Patent No. 5,435,969) teaches a method of fluorometrically monitoring the amount of water treatment agent(s) added to and in an industrial water system, as well as system consumption of water treatment agent(s) in an industrial water system.

With respect to the amount of water treatment agent(s) added to and in an industrial water system, Hoots et al. teaches that the concentration of a water treatment agent in an industrial water system can be calculated by monitoring an inert fluorescent tracer, which is added to the industrial water system in proportion to the amount of water treatment agent. Because the inert fluorescent tracer and water treatment agent are added in known proportion to one another, the concentration of the inert fluorescent tracer can be correlated with the concentration of the water treatment agent. Hoots et al. also teaches how the concentration of water treatment agent can be determined by use of a water treatment concentration indicator. Combining a water treatment agent and incipient reagent forms a concentration indicator. The concentration indicator is fluorescent and therefore its concentration can be determined by fluorometric means. The concentration of the concentration indicator is then correlated with amount of water treatment agent.

With respect to system consumption of water treatment agent, Hoots et al. teaches that system consumption of a water treatment agent in an industrial water system can be determined by monitoring a water treatment concentration indicator in conjunction with an inert fluorescent tracer. System consumption is determined by the difference between the concentration of the water treatment agent added to the system, as determined by correlation to the concentration of the inert tracer, and the concentration of the water treatment agent indicator.

Hoots et al. teaches that these fluorescent-based methodologies are applicable to a wide variety of types of industrial water systems, for example, those involving a membrane separation system. Hoots et al., however, does not specifically describe how the techniques are implemented, but does mention the following:

> "Monitorings of membrane filtration chemicals (WTA's including without limitation treatment chemicals that enhance membrane-separation process performance, antiscalants that retard/prevent membrane scale deposition , antifoulants that retard/prevent membrane fouling, biodispersants, microbial-growth inhibiting agents such as biocides and cleaning chemicals that remove membrane deposits) to determine actual feed rates and in-system concentrations would greatly enhance the operational efficiency of the system and protect the membrane...." (Col. 12, lines 44-53).

Hoots et al. (U.S. Patent No. 5,171,450) describes a method of monitoring and dosage control of tagged polymers in cooling water systems. In particular, a fluorescent monitor is tagged to a polymer so that the polymer can be monitored in the cooling water system. An inert fluorescent tracer may be added in proportion to said tagged polymer as well. System consumption of the tagged polymer can be determined by looking at the difference between the concentration of the inert fluorescent tracer and the concentration of the tagged polymer.

Applicants traverse the Examiner's rejection because not all elements of the claimed invention are taught or suggested by the prior art. A rejection under 35 U.S.C. §103 requires that all elements of the invention are taught or suggested by the prior art. The prior art does not teach or suggest a method of monitoring a membrane separation process where there is the step of selecting an inert fluorescent tracer and a tagged fluorescent agent, wherein the selection is made such that it is known in advance whether said inert fluorescent tracer and tagged fluorescent agent are capable of traveling through the membrane into the permeate stream either separately or together, or not capable of passing through the membrane into the permeate stream either separately or together.

Consumption and degradation of an inert fluorescent tracer and a tagged fluorescent agent in a membrane separation system is different from passage of an inert fluorescent tracer and a tagged fluorescent agent through a membrane separation system. More specifically, the step of selecting whether an inert fluorescent tracer and a tagged fluorescent agent passes through a membrane separation system is different from a step of determining whether an inert fluorescent tracer and tagged fluorescent agent are consumed or degraded in a membrane separation system.

In view of the foregoing, Applicants request that this rejection be removed and that claims 1,2 and 6-18 be allowed.

b. Hoots in view of Hoots and Al-Samadi

Claims 3-5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hoots et al. (U.S. Patent No. 5,435,969) in view of Hoots (U.S. Patent No. 5,171,450) and further in view of Al-Samadi (U.S. Patent No. 6,113,797).

Applicants traverse the Examiner's rejection.

Hoots et al. (U.S. Patent No. 5,435,969) teaches a method of fluorometrically monitoring the amount of water treatment agent(s) added to and in an industrial water system, as well as system consumption of water treatment agent(s) in an industrial water system.

With respect to the amount of water treatment agent(s) added to and in an industrial water system, Hoots et al. teaches that the concentration of a water treatment agent in an industrial water system can be calculated by monitoring an inert fluorescent tracer, which is added to the industrial water system in proportion to the amount of water treatment agent. Because the inert fluorescent tracer and water treatment agent are added in known proportion to one another, the concentration of the inert fluorescent tracer can be correlated with the concentration of the water treatment agent. Hoots et al. also teaches how the concentration of water treatment agent can be determined by use of a water treatment concentration indicator. Combining a water treatment agent and incipient reagent forms a concentration indicator. The concentration indicator is fluorescent and therefore its concentration can be determined by fluorometric means. The concentration of the concentration indicator is then correlated with amount of water treatment agent.

With respect to system consumption of water treatment agent, Hoots et al. teaches that system consumption of a water treatment agent in an industrial water system can be determined by monitoring a water treatment concentration indicator in conjunction with an inert fluorescent tracer. System consumption is determined by the difference between the concentration of the water treatment agent added to the system, as determined by correlation to the concentration of the inert tracer, and the concentration of the water treatment agent indicator.

Hoots et al. teaches that these fluorescent-based methodologies are applicable to a wide variety of types of industrial water systems, for example, those involving a membrane separation system. Hoots et al., however, does not specifically describe how the techniques are implemented, but does mention the following:

> "Monitorings of membrane filtration chemicals (WTA's including without limitation treatment chemicals that enhance membrane-separation process performance, antiscalants that retard/prevent membrane scale deposition , antifoulants that retard/prevent membrane fouling, biodispersants, microbial-growth inhibiting agents such as biocides and cleaning chemicals that remove membrane deposits) to determine actual feed rates and in-system concentrations would greatly enhance the operational efficiency of the system and protect the membrane...." (Col. 12, lines 44-53).

Hoots et al. (U.S. Patent No. 5,171,450) describes a method of monitoring and dosage control of tagged polymers in cooling water systems. In particular, a fluorescent monitor is tagged to a polymer so that the polymer can be monitored in the cooling water system. An inert fluorescent tracer may be added in proportion to said tagged polymer as well. System consumption of the tagged polymer can be determined by looking at the difference between the concentration of the inert fluorescent tracer and the concentration of the tagged polymer.

Al-Samadi discloses a method of water purification. In particular, Al-Samadi discloses a two-stage high pressure high recovery process utilizing two reverse osmosis membrane systems intended to provide very high overall water recoveries. This system answers the need for an improved, economical process for purification of water which provides high water recoveries, even in excess of 99%, while preventing formation of scale on the RO or nanofiltration (NF) membrane surfaces, and thus prolonging the useful life of such membranes.

Applicants traverse the Examiner's rejection because not all elements of the claimed invention are taught or suggested by the prior art. A rejection under 35 U.S.C. §103 requires that all elements of the invention are taught or suggested by the prior art. The prior art does not teach or suggest a method of monitoring a membrane separation process where there is the step of selecting an inert fluorescent tracer and a tagged fluorescent agent, wherein the selection is made such that it is known in advance whether said inert fluorescent tracer and tagged fluorescent agent are capable of traveling through the membrane into the permeate stream either separately or together, or not capable of passing through the membrane into the permeate stream either separately or together.

Consumption and degradation of an inert fluorescent tracer and a tagged fluorescent agent in a membrane separation system is different from passage of an inert fluorescent tracer and a tagged fluorescent agent through a membrane separation system. More specifically, the step of selecting whether an inert fluorescent tracer and a tagged fluorescent agent passes through a membrane separation system is different from a step of determining whether an inert fluorescent tracer and tagged fluorescent agent are consumed or degraded in a membrane separation system.

Therefore, Applicants request that the Examiner removes this basis for rejection and allow claims 3-5.

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CONCLUSION

Applicants respectfully request that a Notice of Allowance be sent for all pending claims.

Respectfully Submitted,

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Date: 3/1/07